STATE OF CALIFORNIA
Budget Change Proposal - Cover Sheet
DF-46 (REV 10/20)

Fiscal Year	Business Unit	Department	Priority No.
2022-23	Various	Various	Various

Budget Request Name	Program	Subprogram
Various	Various	Various

Budget Request Description
Clean Energy Investments

Budget Request Summary
The Administration proposes a $2.035 billion one-time investment from the General Fund over two years, $1.5 million one-time investment from the Energy Resources Program Account (ERPA), and a $1.3 million ongoing investment from the Public Utilities Commission Utilities Reimbursement Account (PUCURA) to support clean energy investments and equitable building decarbonization.

Requires Legislation	Code Section(s) to be Added/Amended/Repealed
☒ Yes ☐ No	Click or tap here to enter text.

Does this BCP contain information technology (IT) components? ☐ Yes ☒ No *If yes, departmental Chief Information Officer must sign.*	Department CIO	Date
	Click or tap here to enter text.	Click or tap to enter a date.

For IT requests, specify the project number, the most recent project approval document (FSR, SPR, S1BA, S2AA, S3SD, S4PRA), and the approval date.

Project No. Click or tap here to enter text. **Project Approval Document:** Click or tap here to enter text.

Approval Date: Click or tap to enter a date.

If proposal affects another department, does other department concur with proposal? ☒ Yes ☐ No
Attach comments of affected department, signed and dated by the department director or designee.

Prepared By	Date	Reviewed By	Date
Click or tap here to enter text.	Click or tap to enter a date.	Click or tap here to enter text.	Click or tap to enter a date.
Department Director	**Date**	**Agency Secretary**	**Date**
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Department of Finance Use Only

Additional Review: ☐ Capital Outlay ☐ ITCU ☐ FSCU ☐ OSAE ☐ Dept. of Technology

PPBA	Date submitted to the Legislature
Damien Mimnaugh	1/10/2022

A. Budget Request Summary

The Administration proposes a $2.035 billion one-time investment from the General Fund over two years, $1.5 million one-time investment from the Energy Resources Program Account (ERPA), and a $1.3 million ongoing investment from the Public Utilities Commission Utilities Reimbursement Account (PUCURA) to support clean energy investments and equitable building decarbonization. The categories of the investments are:

Clean Energy Investment Plan

(Dollars in Millions)

Investment Category	Department	Program	Two-Year Total
Clean Energy Investments	CEC	Incentives for Long-duration Storage Projects	$380
	CEC	Green Hydrogen Grants for Green Electrolytic Hydrogen	$100
	CEC	Industrial Decarbonization	$210
	CEC	Food Production Investment Program	$85
	CEC	Equitable Building Decarbonization	$922.4
	CARB	Equitable Building Decarbonization – Accelerating Adoption of Ultra-low Global Warming Potential Refrigerants	$40
	CEC	Offshore Wind Infrastructure	$45
	DWR	Oroville Pump Storage	$240
	OPC	AB 525 Implementation Resources	$1
	SLC	AB 525 Implementation Resources	$1.2
	CEC	AB 525 Implementation Resources	$1.5 ERPA (one-time)
	OPR	AB 525 Implementation Resources	$0.354
	DWR	Resources to Support Energy Reliability	$3
	CEC	Energy Modeling to Support California's Energy Transition	$7
	CPUC	Planning for a High Distributed Energy Resource Future	$1.3 PUCURA (ongoing)
		Total	$2,039.1

B. Background/History

California has made significant progress toward a clean energy future through programs that promote renewable energy, energy efficiency, electric and clean energy vehicle adoption, local climate planning, and energy storage technologies. Building on this progress, the state

implemented a 100-percent clean energy policy and called for an assessment of the potential for buildings to help meet the state's long term climate goals.[1]

The initial Senate Bill (SB) 100 joint agency report,[2] released in March 2021, found that to reach the 2045 100-percent clean electricity target, California will need to roughly triple its current electricity power capacity. The projected increase is driven by the conversion from fossil fuels to clean energy resources and from growing electricity demand. The major recommendations from the report point to the need for the state to:

- Verify that scenario results satisfy the state's grid reliability requirements.
- Continue to evaluate the potential effects of emerging resources, such as offshore wind, long-duration energy storage, green hydrogen technologies, and demand flexibility.
- Assess environmental, social, and economic costs and benefits of the additional clean electricity generation capacity and storage needed to implement SB 100.
- Hold annual workshops to support alignment among the joint agencies and continuity between SB 100 reports.
- Continue to prioritize energy efficiency and load flexibility measures to reduce additional generation capacity and save Californians money.

The SB 100 report also projects the need for the state to increase the acquisition of renewable resources by threefold and increase the acquisition of energy storage solutions by eightfold. Electricity storage is essential and to keep up with the exponential need for clean, reliable, and cost-effective energy storage solutions, it is necessary to look to diversify the storage portfolio to complement the large amount of lithium-ion battery storage. Research completed on emerging energy storage technologies indicates the state can expect to procure energy storage systems in the next five to ten years that will cost less than half of what is being paid now, for the same level of energy storage. To reach this new capability in time for the state to capture these benefits will require early investments to support these technologies in their efforts to increase to multi-megawatt power ratings and to provide that energy for durations of eight hours or more. While it is clear there are many emerging technologies that can help California address future decarbonization goals, long duration energy storage is clearly one of the most important elements of that energy technology mix.

Parallel to assessing the path to decarbonizing the state's electrical grid, the state also evaluated the potential of existing buildings to reduce greenhouse gas (GHG) emissions and help meet the state's 2045 GHG reduction goals.[3] California has an estimated 14 million existing homes and 7 billion square feet of built commercial space that are responsible for 25 percent of the state's GHG inventory. Emissions from combustion appliances contribute to indoor air pollution and exacerbate existing poor air quality. In addition, as the effects of climate change become more common and pronounced with extreme heat and wildfires, older buildings with minimal or shedding insulation, air gaps, and non-existent or low-performing space heating and cooling are not equipped to fully withstand and protect occupants.

In contrast to the progress being made in newly constructed buildings where regulatory tools are most effective, the decarbonization of existing buildings is more challenging and greatly lags behind the pace required to meet California's climate goals. While retrofits to existing buildings offer the greatest potential for emission reductions, they also face more barriers, such as

[1] Chapter 312, Statutes of 2018 (SB 100, De Leon) and Chapter 373, Statutes of 2018 (AB 3232, Friedman)
[2] SB 100 Joint Agency Report, https://www.energy.ca.gov/sb100
[3] Building Decarbonization Assessment, https://www.energy.ca.gov/data-reports/reports/building-decarbonization-assessment

equipment installation requirements, upfront costs, space constraints, structural issues, deferred maintenance, scheduling around occupant presence, split incentives between tenant and owner, and building upgrade requirements for a construction permit. Resources – in the form of installed equipment and building infrastructure upgrades, available cash, or technical assistance – can significantly accelerate decarbonization and improve quality of life, particularly for low to moderate income Californians. Reducing climate impacts from buildings will primarily come from efficiency, electrification, and ultra-low global warming potential (GWP) refrigerants in equipment.

As California pushes for greater decarbonization of buildings and the electricity system, grid reliability issues during the summers of 2020 and 2021 highlighted the need for technologies and buildings to provide improved grid resiliency and reliability during times of extreme heat events, wildfires, and other unplanned and unavoidable grid events. Reliable and affordable energy services are particularly important for low to moderate income households and disadvantaged communities. In its first annual affordability report released in April 2021, the California Public Utilities Commission (CPUC) found that 13.3 percent of California's lower income households spend more than 15 percent of their income on electricity service. The CPUC also found that 6 percent of lower income households spend more than 10 percent of their income on gas service. These households and communities require direct investment to remedy the systemic inequalities, environmental hazards, and energy burdens affecting them. The COVID-19 pandemic and related recession have only exacerbated these issues and made investments all the more urgent. There is a real risk that without thoughtful and intentional prioritization, the state's most vulnerable and underserved will become the last to receive the benefits of a clean energy future due to lack of capital, credit, and access to infrastructure.

C. State Level Consideration

California faces numerous climate change-induced challenges from wildfires to heat waves to droughts. These challenges impact the safety and health of residents, the reliability of energy systems, and the economy of the state. California has studied, planned, and acted over the last 15 years to reduce the emissions of GHGs and impacts of climate change through the energy, transportation, natural lands, agricultural, and industrial sectors. Under most scenarios analyzed in the 2021 SB 100 joint agency report, the state will need to build, on average, 6 GW of new solar, wind and energy storage resources annually for the next 25 years to meet its mid-century clean electricity goals. While this number is expected to evolve as additional factors, programs, and technologies are examined or implemented, it provides a starting point for planning, coordinating, and taking action.

The SB 100 joint agency report is required to be updated and submitted to the legislature every four years and the next report will evaluate the measures needed to ensure California's power needs are met under a wide range of conditions as the state transitions to 100 percent clean electricity. In future SB 100 reports, the joint agencies will:

- Further assess the potential of emerging technologies, such as long-duration energy storage, green hydrogen generation, demand flexibility and carbon capture and sequestration.
- Examine the economic and land-use effects of the significant build rates.[4]
- Evaluate consistency with the state's goals for clean energy equity.

[4] In 2021 the CEC, CPUC, and California ISO initiated a collaborative process to focus on the resource build requirements needed to achieve the SB 100 goals. This on-going collaboration and includes a public stakeholder process. On May 21, 2021, the CEC opened a new docket, 21-SIT-01, for SB 100 Implementation Planning for SB 100 Resource Build. https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-SIT-01. Workshop materials and public and stakeholder comments are available in the docket.

- Align future SB 100 planning with findings and outcomes from relevant state efforts, such as the California Energy Commission's (CEC) energy demand forecasts.

The 2021 SB 100 joint agency report presents the results from computer modeling of future electric system scenarios and different combinations of resources to meet the 2045 policy. Under an assumption that 10 gigawatts of offshore wind energy is deployed by 2045, the model estimated $1 billion in reduced total resource costs compared to other technology options of eligible renewable and zero carbon technologies. The state is continuing to assess offshore wind (OSW) energy, and engage in the federal process, and is building on key information to inform upcoming regulatory processes and decision-points. At the same time the state is engaging in these regulatory process, by June 30, 2023, the CEC is required to develop a five-part strategic plan for offshore wind energy off the coast of California that meets the requirements of Assembly Bill (AB) 525.[5] Beyond assessing and planning for OSW energy, to realize the potential benefits of an offshore wind energy industry, California's waterfront facilities will require investments to upgrade and expand their existing infrastructure in-time to meet OSW energy deployment opportunities.

In addition to expanding generation capacity, decarbonizing homes and businesses is necessary to meet near-term and midcentury climate goals. Building decarbonization is achieved through a combination of:

- Energy efficiency.
- Renewable and zero-carbon electricity (utility and distributed generation).
- Efficient electrification of end uses (for example, heat pump water heating or air conditioning).
- Implementing distributed energy resources like rooftop solar and batteries.
- Switching to climate-friendly refrigerants and improving refrigerant management.
- Displacing fossil gas.
- Shifting and shaping energy loads with demand flexibility.

California needs to stimulate significant private market investment into existing building decarbonization if it is to achieve energy efficiency doubling by 2030 and be on track for 2045 clean electricity and GHG reduction goals. As modeled in the *2021 Building Decarbonization Assessment,* to reduce buildings share of GHG emissions and meet 2030 and 2045 climate goals, a range of 15 to 90 percent of installed combustion equipment in homes and businesses would need to be replaced at burnout with efficient electric equipment and a range of 5 to 70 percent of installed combustion equipment would need to be replaced *before* end of life with efficient electric equipment. Replacing these existing equipment stocks with low carbon emission alternatives would take more than 15 years -- well beyond 2030. More aggressive efficiency and decarbonization is needed from programs and the private market to get on track for 2030 given the rate of equipment replacement needed. The key space and water heating equipment that drives the bulk of on-site GHG emissions have expected lifetimes of 10-20 years. That makes the market transformation of new equipment sales a key priority. Each replacement of major equipment presents an opportunity to achieve long-term energy and GHG savings and make additional improvements to the building in support of public health and safety.

Special regulatory and programmatic attention is also required to ensure energy services remain affordable and low to moderate income and disadvantaged communities receive prioritized and direct decarbonization investments. The upfront costs of building decarbonization-related technologies and upgrades need to be considered along with the utility bill savings and a range

[5] https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB525

of non-energy benefits that can be realized by deployment of low carbon technologies. Affordability, equity, health, and safety need to be integrated into the core of any statewide building decarbonization plans.

Achieving the state's policies to vastly increase renewable energy and drastically reduce carbon emissions will not only help temper the effects of climate change globally but also improve the health of Californians and their economy. In addition to transitioning the electricity sector to 100 percent clean energy by 2045, the state has now committed to having an economy that is "carbon neutral" by the same year, i.e., eliminating as much climate-warming pollution as it emits. The funding proposed will provide the resources needed to spur investment in technologies that will put California on a path toward achieving clean energy and climate goals.

D. Justification

The resources proposed will build upon California's successful clean energy initiatives by making investments that put California on track to achieving its clean energy goals and by providing the resources needed to advance analytical improvements to the California Energy Demand Forecast, forecasting products for grid reliability purposes, existing building decarbonization, energy equity, building resiliency during extreme weather events, and decarbonizing the state's electricity system by 2045.

Clean Energy Investments

The climate crisis is here – there is an extreme urgency to bring a diverse portfolio of new clean energy projects on-line as quickly as possible to combat climate change. Modeling shows that California will need to pursue a range of projects to meet its goals and help meet the increased electricity demand from electrification of its transportation and building sectors, backfill the impending retirement of Diablo Canyon (~2,200 megawatts (MWs)) and retirement of existing once-through-cooling gas-fired generation (~3,700 MWs), improve grid reliability and resilience, promote energy equity, and move California away from reliance on natural gas-powered energy generation to meet clean energy goals. Technology innovations will be key to performance enhancements. Additionally, technology scale up will be critical to bring price reductions to clean energy deployment. Deployment of projects should be prioritized to improve air quality in under-resourced communities.

Incentives for long-duration storage ($380M General Fund over two years)

While California is developing field experience with short-duration energy storage (considered by most as energy storage durations of four hours or less) many of the current academic and industry studies illustrate the need for long-duration energy storage (energy storage durations of eight hours or more) as increased renewables are added to the grid. Substantial increases in energy storage assets must be planned to match this rapid growth in renewable generation. Long-duration grid-level storage is critical to the success of California's efforts to de-carbonize its energy system. The state must begin today to deploy innovative storage on various locations of the grid to provide critical capacity and grid services and to learn what long duration technologies work best in what applications. California has invested in emerging energy storage technologies for over a decade and the emerging long duration energy storage technologies provide the state new opportunities to pursue better performing and lower cost energy storage technologies. The timing is ideal to match the growth in technology with the rising need for capability to ensure California has the best possible system installed in the future.

Incentives to deploy long-duration storage technologies that are on the verge of commercialization and, with incentives, would position these technologies to scale-up and move from demonstration-scale to commercial deployment in the next 5 to 10 years. Analyses indicate that there is a need for a minimum of about 1,000 MW of long-duration storage by 2030 and 4,000

MW by 2045.[6] This number could increase as more detailed analysis points to further reliability and resiliency needs for the grid of the future.

This funding would support early-stage deployment of these technologies that could include but would not be limited to advanced technology batteries based on new materials and metals such as zinc, nickel, magnesium, and others that offer the benefit of lower costs compared to today's average costs, safer operations because they do not have thermal overheating challenges, and longer operational performance. The primary research target for demonstrations will be in the 3-10 MW range with a stretch goal for reaching as much as 30 MWs. For energy storage duration, the focus is on 8 hours or more with a stretch goal of reaching 20 to 100 hours of duration. Many short duration energy storage systems have operational limits on the number of cycles per day and over a lifetime. The benefit of many of these long duration technologies is that they do not have this same limitation. Also, these long duration technologies offer a better global supply chain to support a rapid growth in future demand because they employ minimal use of rare earth minerals. Example technologies are:

- Flow batteries (5 to 10 MWs of capacity and durations of 8 or more hours) that have potential to reduce cost per MW as they scale in size and offer higher daily cycles, longer life and significantly less degradation over time compared to current technologies.
- Mechanical systems and gravity feed technologies (5 MWs or more of capacity and durations of 8 or more hours) that offer higher efficiencies, the ability to perform well in a wider range of outside air conditions and can support industrial and remote field operations better than current technologies.
- Thermal storage and aqueous battery systems (5 MWs or more of capacity and durations in the range of 20 to 100 hours) that provide some of the lowest price per kilowatt hour available and can support both short term grid challenges and seasonal energy storage needs.
- Compressed air and liquid air technologies (10 MWs or higher of capacity and durations of 8 or more hours) that offer high power and an existing base of systems that have decades of performance data. The technologies rely heavily on proven technologies and the newer technologies provide reduced environmental challenges.
- Pumped hydro technologies are not included in this list because the industry considers this technology already commercially available with a large global database of operating systems. Normally, environmental and siting issues are the key challenges this technology faces rather than the technical challenges experienced by the other emerging technologies on this list.

This funding would support the development of a range of long duration energy storage projects throughout the state and would occur in phases with the goal of continuously scaling up the size of the projects. The first phase of projects is expected to include 12 to 16 different demonstration projects. The second phase will include fewer projects (7 to 10), of a much larger scale than the first phase. The knowledge gained and the experience from both phases is expected to move these long duration energy storage technologies into commercialization for rapid deployment without the need for ongoing public funding. This will enable these technologies to compete commercially for future utility and other contracts. The two-phase approach also allows for reduced public funding in phase 2 as the technologies mature.

This one-time funding is designed to provide the resources necessary to sponsor the demonstration efforts to advance several of the emerging long duration energy storage technologies. The first phase will target initial power ratings in the range of 3 to 5 MWs and

[6] CPUC Rulemaking 16-02-007, Decision 20-03-028 March 25,2020, 2019-2020 Electric Resource Portfolio to Inform Integrated Resource Plans and Transmission Planning, Table 5, page 41. SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future, An Initial Assessment, March 2021, CEC-200-2021-001, page 75.

durations in the range of 8 or more. The second phase will advance these technologies to provide 5 to 10 MWs or higher and durations in the 8 hours or more. Some research will focus on stretch goals for much longer durations in the range of 20 hour to 100 hours range.

Without this one-time insertion of funding, these emerging long duration energy storage technologies will advance at a much slower pace and will likely not be part of the portfolio of energy storage systems procured in the state prior to 2030. In addition to advancing these technologies, this one-time funding will create new jobs in the energy storage market and create an incentive to locate manufacturing and jobs in California to support the long-term energy storage market. One of the key elements of these demonstrations is providing unbiased performance data that is critical for attracting project financing from the commercial financial market. Most of the current larger energy storage systems (systems greater than 20MWs) are financed with some type of long-term financial commitment (e.g., power purchase agreements, or leases). This one-time injection of funding will allow these technologies to demonstrate their capabilities at multi-megawatt scales, build confidence and spur further investment from the commercial financial market.

This funding will build upon the CEC's ongoing research and development efforts to advance energy storage technologies, in which long-duration storage technologies have been demonstrated from systems in the range of 500 kilowatts and durations of 6 to 10 hours. This funding will build upon these early successes by incentivizing these emerging technologies to lower cost while improving power and duration capability.

The estimated number of jobs created was evaluated based on two methodologies. The IMPLAN tool is an economic impact analysis software using extensive modeling and demographic statistics. The other method used information from the International Energy Agency (IEA). The IEA uses varying construction and manufacturing job information for different industries. The following are the estimates from these resources:

- Using input-output modeling from IMPLAN, this funding is estimated to create 670 jobs per year. Over a 6-year period, this is estimated to result in over 4,000 jobs.
- As there was no category for production of long duration storage technology on the IEA document, the CEC looked at the various categories listed and estimated a conservative 6 jobs per million dollars of funding. Using this estimate, over 2,280 jobs are estimated to be created.

These are relatively conservative estimates that only consider the proposed funding amounts identified in this proposal and do not factor in any potential leveraged federal funding or follow-on private investment.

Green hydrogen: grants to scale electrolyzers ($100M General Fund)

These funds will be used to address the need to advance the state of technology that uses and produces green hydrogen by expanding the capability and lowering the cost of the electrolyzers that are used to produce green hydrogen and also expanding the knowledge and capability of how to transport, store and convert the green hydrogen to electricity at various end user sites. The lessons learned from these efforts will provide the baseline to expand the production and use of green hydrogen as may be needed throughout California and provide a better understanding of the commercial viability of using green hydrogen more actively to meet the future goals of SB 100.

These funds are focused on the production and cost-effective use of green hydrogen. This is a no-regrets approach because California and the rest of the world currently consume large quantities of carbon-intensive hydrogen. Regardless of what expanded role hydrogen may play in our energy future, we will need to develop ways to remove carbon from the current production process.

The CEC has a long history of investing in emerging energy technology demonstrations designed to support the state's evolving energy needs and the decarbonization of California. As California evaluates the key technologies needed to accelerate clean energy goals, green hydrogen continues to surface as a promising technology pathway that may be able to assist targeted sectors in their decarbonization efforts. One of the promising sectors is helping the hard to decarbonize industrial sector convert high temperature processes from fossil fuels to green hydrogen. Another promising application is the use of green hydrogen to support grid reliability and resiliency by providing long duration energy storage in the 50 to 200 hours range and demonstrating the use of and value of seasonal energy storage. Seasonal energy storage is currently considered one of the most promising applications of green hydrogen as the hydrogen can be stored for weeks, months or even years in a suitable storage facility with very little loss of capability. For seasonal energy storage to be effective, the energy must be able to be stored for long periods of time without the need to keep the system recharged like is required for batteries or other energy storage technologies.

Additionally, where the vehicle transportation industry electrification is primarily focused on electric battery vehicles, some future applications in the transportation industry such as medium and heavy-duty vehicles, maritime equipment, aviation systems and the rail industry may find that fuel cells that use green hydrogen could provide future capabilities that are not currently projected for future battery technology solutions.

Each of these promising applications for hydrogen involves applications where the alternative decarbonization strategies have operational or performance challenges and hydrogen may turn out to be a superior solution.

Currently, grey hydrogen, or hydrogen generated from fossil gas, represents over 95 percent of the worldwide use of hydrogen. Grey hydrogen is currently less expensive than green hydrogen, but as energy users consider their decarbonization options, many are expected to consider transitioning to green hydrogen. Also, green hydrogen can be produced during periods of excess renewable electricity generation, possibly lowering the production cost. Scaling these technologies from small research scale demonstrations to large megawatt scales is a necessary step to lower the costs of production and catalyze market interest. The capability to produce large quantities of green hydrogen at a reasonable cost and then transport and store it until it can be converted to electricity when needed is a fundamental steppingstone for any future use of green hydrogen.

This funding will demonstrate the scaling green hydrogen production in 10 to 15 commercial scale projects with these focus areas:

- Electrolyzers**:** Provide grants to support the production of lower cost green electrolytic hydrogen for delivery/use in California. Approximately two thirds of this funding will focus on this element of cost reduction and efficiency improvements for electrolyzers.
- Provide grants to support the transportation, storage, and conversion of green hydrogen to the site where needed. Alternative configurations will be evaluated and demonstrated:
    - One demonstration option will be to generate the hydrogen and transport it for storage a local storage facility on or near the same conversion site.
    - A second demonstration option will be to generate the hydrogen, centrally store it, and then transport it longer distances to various site locations. This hub and spoke may prove more cost-effective.

The estimated number of jobs created was evaluated based on using the IMPLAN tool and information from the IEA. The following are the estimates from these resources:

- Using input-output modeling from IMPLAN, this funding is estimated to create 80 jobs per year. Over a 6-year period, this is estimated to result in 480 jobs.

- For hydrogen production, IEA estimates 6 jobs per million dollars of funding. Using this estimate, 600 jobs are created.
- The jobs created for the green hydrogen electrolyzer advancement will include research, design, manufacturing, and field demonstration positions with a focus in this program of encouraging these emerging technology companies to develop or expand manufacturing in California.

These are relatively conservative estimates that only consider the proposed funding amounts identified in this proposal and do not factor in any potential leveraged federal funding or follow-on private investment.

Industrial Decarbonization ($210M General Fund over two years)

These funds will address the need to accelerate decarbonization of the industrial sector to reduce GHG emissions and achieve the state's clean energy goals. California's industrial sector is responsible for over 35 percent of the state's natural gas use and contributes approximately 100 million metric tons of carbon dioxide equivalent emissions (MMT CO2e), which is more than 20 percent of the state's GHG emissions. Process heating accounts for about 85 percent of industrial sector's natural gas use. Assuming this program results in a conservative 5 percent reduction in natural gas use for process heating, the resulting GHG emission reduction would be approximately 20 million metric tons of CO2 equivalent emission over a 20-year period (equivalent to removing 215,000 passenger vehicles from the road each year).

There are over 40,000 industrial facilities in California, employing over 1.2 million people. A resilient industrial sector is essential for the economic and social well-being of the people of California. The sector has faced challenges, such as the COVID-19 public health pandemic, supply chain and labor shortages and disruptions, cost competitiveness with foreign products, and climate change. As most industrial facilities are in disadvantaged and low-income communities, these communities bear the disproportionate burden of environmental impacts. The scale of these challenges requires a comprehensive approach and investments in infrastructure to achieve environmental sustainability and resiliency.

Decarbonization of the industrial sector is particularly challenging given the wide range of industrial processes and equipment types, as well as limitations for electrification in certain segments of the sector such as high-temperature processes. Additionally, industrial facilities are often designed and built to operate for decades, and thus facilities aren't motivated to transition to greener technologies before the end of equipment lifetime without financial incentive or support. These funds will provide a one-time insertion of funding to establish a program to accelerate the field deployment of industrial decarbonization projects that represent the most promising opportunities to substantially reduce GHG emissions from the industrial sector. This funding will help California's industrial sector remain economically competitive as the state transitions to clean energy and ensure job security and economic growth within the sector.

This is one-time funding for the CEC to provide and administer a grant program for the purchase and deployment of commercially available advanced technologies and equipment and to also develop and deploy novel decarbonization technologies and strategies for the industrial sector. Grants will target primary emitters of GHGs, such as chemicals, metals, and nonmetallic minerals including cement, glass, and pharmaceuticals (not including petroleum and gas production). Heating is the most common process across the industrial sector, accounting for more than half of industrial GHG emissions. These industries use high-temperature heating that is hard to electrify. Investing in the demonstration of emerging cross-cutting technologies for the decarbonization of high temperature heating at full scale will provide the needed technical performance data and financial information to promote private investments and encourage adoption of these technologies.

The grant program would award funds to industrial facilities, researchers, equipment manufacturers/vendors, and project aggregators to (1) electrify processes, including high temperature heating, that use natural gas and other fossil fuels, (2) incorporate energy storage, solar, wind or other renewable energy sources into industrial processes, (3) increase energy efficiency, (4) develop and deploy carbon capture for use in products, such as carbonate mineralization, and carbon curing of concrete to reduce or eliminate GHG emissions and not carbon capture for the purposes of geologic storage, and (5) develop and deploy other decarbonization strategies such as use of zero carbon heat sources, fuel switching to zero carbon fuels and use of alternative raw materials and processes that can reduce GHG emissions or facilitate electrification. This can include use of renewable gas, green hydrogen, or solar thermal, or changing material inputs and process methods to reduce carbon dioxide emissions.

Capturing carbon from industrial processes and then utilizing it in a product is considered one of the essential components for mitigating CO2 emissions since it can achieve net negative emissions, especially for sectors that are unable to achieve zero emissions. For example, carbon capture and utilization appear to be a pathway to achieve significant decarbonization of the cement industry where 60 percent of the carbon dioxide is from process emissions.

However, there are promising technologies that enable utilization of the captured carbon to produce marketable industrial and commercial products, such as chemicals, plastics, synthetic fuels, and carbon containing minerals. For instance, carbon capture and utilization in the cement industry has recently emerged with sustainable techniques to use carbon emissions in concrete production. Some emerging utilization techniques, such as mineral carbonation, includes adding carbon into cement to enhance the concrete's compressive strength. With almost 4 billion tons of construction aggregate produced in North America, mineral carbonation could be the most energy efficient route for CO2 utilization. The focus of the CEC efforts in this proposal is on carbon capture and utilization and not on geologic storage or sequestration.

Examples of jobs that could be created from this program include equipment manufacturers, engineers, designers, energy auditors, construction workers, equipment operators, environmental specialists, and other technical specialists. The estimated number of jobs created was evaluated based on using the IMPLAN tool and information from the IEA. The following are the estimates from these resources:

- Using input-output modeling from IMPLAN, this funding is estimated to create 250 jobs per year. Over a 6-year period, this is estimated to result in 1,500 jobs.
- For industrial efficiency retrofits, IEA estimates about 10 jobs per million dollars of funding. However, since a combination of industrial energy efficiency, hydrogen, zero carbon, fuel switching and other projects will also occur, the CEC averaged the jobs among these sectors because there are different labor intensities and assumed 6 jobs per million dollars of funding. Using this estimate, over 1,200 jobs are estimated to be created.

These are relatively conservative estimates that only consider the proposed funding amounts identified in this proposal and do not factor in any potential leveraged federal funding or follow-on private investment.

Food Production Investment Program ($85M General Fund)

This funding will address the need to accelerate the adoption of energy technologies at California food production facilities to reduce GHG emissions by providing additional funds for the CEC's Food Production Investment Program (FPIP). FPIP provides grants to California food producers to install energy efficiency and renewable energy technologies in food processing plants that will reduce operating costs and GHG emissions. The goals of FPIP are to accelerate the adoption of advanced energy efficiency and renewable energy technologies, demonstrate their reliability and effectiveness, help California food processors work towards a low carbon future,

and benefit disadvantaged communities and low-income communities. FPIP could help ensure California's food production industries remain competitive and operational, and that jobs associated with food production remain in California. This funding would also be used to expand the current program to include other emerging decarbonization technologies and strategies.

FPIP will continue to assist California food producers achieve the following in their facilities:

- Modernization: Support adoption of commercially available, energy efficient equipment upgrades that are "drop-in ready" replacements or additions to existing equipment or processes that provide greater GHG emission reductions than current best practices or industry standard equipment.
- Driving the Future: Support adoption and demonstration of emerging technologies needed to achieve major GHG emission reductions necessary to accelerate the food processing industry into a low carbon future.
- The CEC's intent is to keep FPIP separate from the Industrial Decarbonization program for the following reasons:
    - FPIP is already an established program with a proven track record, built on strong stakeholder input from food producers. The program was tailored to the specific needs of the food producing sector in California and considered their seasonal and operational constraints. As an established program, funds could also be rolled out quickly and projects implemented faster than in a combined program which will take more upfront scoping and development.
    - Developing an effective clean energy program for the food production sector took years of engagement with the industry to build a common understanding of food producers' needs, to build trust, and to identify technologies that would be most beneficial to food producers, as well as design a program structure that would benefit both the state and food producers. Merging food producers with other industries could impact their overall effective engagement and participation because of the different interest in technologies and outcomes.

There are a total 7,262 food and beverage processing facilities in California emitting about 3.2 million MT CO2e annually. Food processing is also a key economic sector, contributing approximately $82 billion to California's economy, 192,000 direct jobs, and 544,000 indirect jobs (Bureau of Labor Statistics and California League of Food Producers). This funding will allow for FPIP to expand and include other emerging decarbonization technologies and strategies beyond energy efficiency and renewable energy. Eligible projects would include electrification of natural gas or other fossil fuel using processes, incorporation of photovoltaics, energy storage, or other renewable energy sources, energy efficiency, and development and deployment of other decarbonization strategies.

Currently, FPIP has administered the available funding, totaling approximately $116 million, with no additional funds allocated since 2018. FPIP has funded 50 grant awards at 66 project sites. Fifty-six of these sites, approximately 85 percent, are in and benefitting disadvantaged or low-income communities. Approximately half of these project sites are in the San Joaquin Valley. FPIP projects reduce GHG emissions by reducing natural gas consumption, reducing electricity consumption, and reducing refrigerant leakage. A co-benefit to these savings is reducing criteria pollutant emissions (e.g., NOx, PM, SOx, CO) which improves local and regional air quality. Another co-benefit is local economic stimulation (e.g., job creation, workforce development) through project construction activities. Continuation of the FPIP program would result in additional projects which predominantly benefit disadvantaged and low-income communities.

The investment made previously in FPIP will result in an estimated reduction of 164,000 MT CO2e per year. This translates to a lifetime reduction of 3.3 million MT CO2e per year and a cost per metric ton of $35 a ton assuming a conservative 20-year project lifetime. According to the 2021

California Climate Investments Annual Report, this cost per ton is the fourth lowest out of over 70 funded programs (lower is better). Conversations with the California League of Food Producers, Ag Council and others indicate that there is a continued need for funding to help this sector decarbonize and modernize with high efficiency equipment that has the potential to reduce up to 40 percent of the GHG emissions in their facilities. These reductions are needed to retire and replace antiquated, inefficient fossil-fuel burning equipment.

In an industry that continues to be heavily impacted by the COVID-19 pandemic, labor and supply shortages, regulatory, and high energy and operating costs, providing funding for technologies that can help improve their operations is vitally needed. The savings can increase financial stability and support continued jobs in this sector.

Examples of jobs that could be created from this program include equipment manufacturers, engineers, designers, energy auditors, construction workers, equipment operators, environmental specialists, and other technical specialists. The estimated number of jobs created was evaluated based on using the IMPLAN tool, information from the IEA, and using the California Air Resources Board Jobs Co-Benefits Modeling Tool. The following are the estimates from these resources:

- Using input-output modeling from IMPLAN, this funding is estimated to create over 130 jobs per year. Over a 6-year period, this could result in over 800 jobs.
- For industrial efficiency retrofits, IEA estimates about 10 jobs per million dollars of funding. Using this estimate, approximately 850 jobs are created.
- Using the California Air Resources Board's Jobs Co-Benefits Modeling Tool, approximately 9 jobs created per million dollars of funding. Using this estimate, over 760 jobs are created.

These are relatively conservative estimates that only consider the proposed funding amounts identified in this proposal and do not factor in any potential leveraged federal funding or follow-on private investment.

Equitable Building Decarbonization ($922.4M General Fund over two years)

Residential Building Decarbonization Direct Installs and Statewide Rebates

The CEC would implement direct installations for low to moderate income households and statewide rebates for low-carbon technologies. CEC would work through a third-party implementer to deliver an existing buildings direct install program for low to moderate income households. Low to moderate income households would include households in disadvantaged communities identified pursuant to Section 39711 of the Health and Safety Code; households at or below 80 percent of the statewide median income; or households with income limits of moderate or below as identified by California Housing and Community Development pursuant to Health and Safety Code Section 50093. CEC would also implement statewide rebates to all Californians through a third-party implementer, partnering with local governments as necessary. These program channels offer the broadest reach to all Californians, including the neediest of Californians. The program would provide low-carbon equipment to reduce GHG emissions that would improve indoor air quality, health, safety and comfort for occupants; increase resiliency to extreme heat events; and facilitate the ability to respond to electricity grid price, GHG, and reliability signals.

The direct install program would focus on building decarbonization measures with a primary focus on decreasing GHG emissions and advancing market transformation through a large volume of small, fast, and highly replicable direct install projects, on the scale of $2,000 to $40,000 per building. Based on these cost estimates, a projected 13,000 to 274,000 existing buildings would be decarbonized with modeled energy savings of 200-5,000 Giga British Thermal Unit (GBTU) per year and flexible load potential of 5-98 gigawatt-hours (GWh) per year. Eligible measures would include energy efficiency measures such as insulation, high-performance windows, LED lighting, and air sealing to reduce building envelop leakage; smart thermostats; electrical panel and

related infrastructure (wiring) upgrades needed for electric equipment and electric vehicles; and replacement of fossil fuel equipment with flexible, efficient electric, and/or low and ultra-low GWP equipment. While replacing older appliances with highly efficient electric equipment provides most of the climate benefit, energy efficiency and flexible demand measures are imperative to saving households money, improving comfort, shifting energy usage to off-peak rates, and enhancing grid reliability. The program would also include contractor and consumer education, outreach, and technical assistance related to new decarbonization technologies for existing buildings and the direct install program, which would complement and add to CEC's responsibilities under SB 68 (Becker, Chapter 720, Statues 2021). CEC would leverage implementation of SB 68 with responsibilities under this BCP.

The statewide rebate program would be administered through a third-party implementer, partnering with local governments as appropriate. Rebates for low-carbon technologies would be made available statewide with consideration given to product availability of these new technologies and other factors such as climate zone. Based on costs of $1,000 to $8,000 per building, an estimated 40,000- 313,000 buildings would receive rebates with energy savings of 530-5,600 GBTU/year and flexible load potential of 16-130 GWh/yr. The CEC would leverage rebates being offered by other state and local governments, as well as utilities.

The CEC would conduct competitive solicitations for third-party implementers to run direct install and statewide rebate programs. CEC staff is needed to conduct a public process to gather stakeholder and public input on program allocations, program design, funding distribution and, if appropriate, prioritization; develop, conduct, and award a competitive solicitation for third-party implementers; conduct education, outreach, and technical assistance to installation contractors and consumers; manage program implementation and the third-party implementers; and monitor, track, and report program metrics and progress to others.

Accelerating Adoption of Ultra-low Global Warming Potential refrigerants (California Air Resources Board)

The California Air Resources Board (CARB) would expand the existing program to accelerate the deployment of next generation ultra-low GWP refrigerants in existing building equipment. Most refrigeration and air conditioning systems deployed in California utilize high GWP refrigerants that are so potent that their leakage and disposal make up roughly 3-4 percent of the state's GHG inventory, with some systems using ozone depleting refrigerants that will transition over time to hydrofluorocarbons (HFCs). These funds would be used as incentives to drive equipment replacement and retrofits in existing buildings that would utilize new ultra-low GWP refrigerants that are 100 times less potent. Accelerating this transition and driving market transformation is key to meeting the SB 1383 (Chapter 395, Statutes 2016) mandate, which requires these emissions be reduced by 40 percent of 2013 levels by the year 2030, and to help meet carbon neutrality goals.

Offshore Wind Infrastructure ($45M General Fund)
Offshore wind energy will advance California's progress toward its renewable energy and climate goals, and if developed and deployed at scale, has the potential to provide both economic and environmental benefits at both the local and state levels.

As offshore wind energy develops off the California coast, California ports, harbors, and other waterfront facilities have the potential to serve as strategic hubs, playing a key role in the floating offshore wind supply chain, if they can meet the needs of the offshore wind industry. However, to maximize the environmental and economic benefits of an offshore wind energy industry, California's waterfront facilities today would require significant investments to upgrade and expand their existing infrastructure.

The $45 million is proposed for a program to make investments in facility planning and development activities that will advance the capabilities of deploying offshore wind energy in federal waters off California.

The program will include three categories that target different phases of preparing waterfront facilities in California to support offshore wind energy development:

1. Developing individual or regional facility retrofit concepts and investment plans.
2. Supporting final design, engineering, environmental studies and review, as well as construction of retrofits.
3. Providing cost share funding to applicants that apply for and receive a federal award that includes activities consistent with those identified above.

Oroville Pump Storage ($240M General Fund over two years to Department of Water Resources)

The Oroville Dam complex (Hyatt- Thermalito hydroelectric facility) has 925 MW generation and 480 MW pumping capacity. In the late summer and fall, generation is drastically curtailed because of temperature considerations in the Feather River. In addition, Department of Water Resources (DWR) has a federal requirement to reduce temperatures further.

The Hyatt-Thermalito hydroelectric facility has been constructed with the ability to operate in "pumpback" mode whereby energy is used during times of the day when renewables energy is in excess to pump water up into Lake Oroville and then release that water in order to generate clean energy during times of the day when it is needed most. This pump-back operation provides needed support to the State's energy grid and facilitates allowing further integration of renewable resources. However, this ability to conduct pump-back operations is constrained by downstream water temperature considerations.

Contingent on complying with CEQA, DWR would use $240 million General Fund to build a temperature management project to address temperature issues at the Oroville complex. This would enable the State to restore pumpback operations at the Oroville complex and use the 925 MW generating facility and 480 MW pumping capacity to its full potential, serving as a very much needed long duration energy storage facility to support the electric grid's reliability needs. Moreover, this would ensure needed temperatures and flow are maintained for spawning salmon in the Feather River.

The Oroville complex includes generation and pump back facilities. Since 2006, the facility has been operating under temperature constraints that severely limit its potential to supply power to the State's grid during key hours. To optimize the facility, and contingent on complying with CEQA, DWR would use $200 million of this capital outlay funding to provide for the planning, design, permitting, and construction of a project that would modify one of the Oroville Dam outlets (the Palermo Outlet) to allow it to reliably access and release the colder water that exists at the lower elevations of Oroville lake. This project would also include a five- to six-mile-long pipeline to move the cold water downstream to where it is needed, and enables restoration of the pumpback operations. Finally, this project would include a flow control facility with a potential for additional 20 MW hydroelectric generation estimated to cost $40 million.

Assembly Bill 525 Implementation Resources ($2.6M General Fund and $1.5M ERPA)
A total of $4.1 million is requested to support an interagency approach to fulfill the statutory requirements of AB 525 to develop a strategic plan for offshore wind energy development in federal waters off the coast of California. The funds would support the CEC, Ocean Protection Council, State Lands Commission, and the Governor's Office of Planning and Research. AB 525 requires the CEC to establish 2030 and 2045 planning goals, as specified, for electricity generated by offshore wind energy. Additionally, the bill requires the CEC, in coordination with specified agencies, to develop a five-part strategic plan, with phased deliverable deadlines, for offshore

wind energy development and to submit the plan to the California Natural Resources Agency and the Legislature by June 30, 2023.

- **California Energy Commission:** $1.5 million in one-time ERPA funding for technical assistance to support CEC's lead role in all aspects of developing the strategic plan, including robust coordination and collaboration with other agencies, stakeholders, and tribal governments. The funding request includes $400,000 to support fishing industry engagement, and $1.1 million for other outreach, spatial mapping, and other technical analyses (e.g., transmission, stakeholder engagement, wind resource assessments, permitting, and tribal/cultural resources).
- **Ocean Protection Council:** $1 million in one-time General Fund to support environmental research and meeting the requirements of AB 525, including understanding and addressing the requirements to develop strategies for addressing potential impacts of offshore wind energy on coastal resources, fisheries, and Native American and Indigenous peoples. The funding would be used for contracts and/or grants for environmental research that help fulfill the requirements of AB 525.
- **State Lands Commission:** $1.2 million in one-time General Fund for technical assistance to support completion of a study of ports and other waterfront facilities as required by AB 525.
- **Governor's Office of Planning and Research:** $354,000 in one-time General Fund for technical assistance to support a study of supply chain, economic development strategies, and workforce development assessments to meet the requirements of AB 525.

Resources to Support Energy Reliability ($3M General Fund to Department of Water Resources)

Using an interagency approach, this funding would support actions that expand energy supply and storage in California directed by studies and assessments by the CEC, CPUC, and the California Independent System Operator (CAISO). DWR would provide consultation for engineering support to perform comprehensive site assessments, site prioritization, site selection, and site outreach to inform decisions as to the capability and practicality of making clean power generation commercially available to mitigate energy shortages.

In addition, DWR would support CEC, CPUC, and CAISO as needed relating to electric grid reliability due to energy shortages, as well as meeting the state's decarbonization goals with engineering expertise regarding commercially available or emerging technologies for power production or energy/fuel storage. As needed, DWR would support identifying and evaluating recommendations to streamline processes with respect to electric grid interconnectivity and network upgrades needed, permitting, and efficient and effective construction management.

Energy Modeling to Support California's Energy Transition ($7M General Fund)

The CEC performs multiple modeling activities to support state energy planning proceedings and policy development. Over the past several years the scope of the modeling activities has expanded in scope and importance, and currently includes:

- Electricity system models to assess types of electricity generation resources that need to be built to meet state clean-energy goals, ensure proper system operations, and assess electric system reliability.
- Natural gas models to project gas prices for consumers, understand system dynamics (e.g., how much storage of natural gas is needed), and natural gas reliability, as well as the reliability of the electric system resulting from the use of natural gas fired power plants.
- Demand models to help project what electricity and natural gas will be needed to meet customer demand

These efforts have rapidly expanded as a result of the state's long term climate goals, the power outages in August 2020, and the changing dependency on natural gas and how that system will change to meet climate goals. The CEC needs to make numerous improvements to the models and approaches it uses to adequately address and inform the state's electricity planning process and inform policy. If CEC is not able to make the necessary improvements to the existing modeling paradigm, it would pose serious threat to reliability and the state's clean energy goals.

The CEC will use $7 million to:

- Establish stronger connections among agencies and with utility and balancing authority modelers and planners to improve data and analysis.
- Facilitate improved modeling coordination across specializations and agencies to improve all analyses and accessibility of data for stakeholders.
- Equip staff with the information and skills needed to perform the modeling work expected over the next three years, as well as train staff to maintain, update, and expand analyses in the future that must be contracted for in the near term, such as economic analyses, non-energy and equity analysis, and incorporation of west-wide policies and plans that impact California's energy plans.
- Begin to expand our understanding of how changes in the west affect California's energy posture, as well as develop a more detailed understanding of the western energy situation to inform decisions about how much California can rely on imports or the need to build more resources within the state and the costs to customers.

Planning for a High Distributed Energy Resource Future ($1.3M PUCURA ongoing to California Public Utilities Commission)

Funding for this initiative will provide for six (6.0) new permanent full-time positions to support the safe integration of distributed energy resources (DER)[7] into the state's electric distribution system. The deployment and integration of DER is a critical strategy for improving the resiliency, reliability, and environmental performance of the state's electric system.

[7] A DER is a distributed renewable generation resource (e.g., solar panels), energy efficiency, energy storage, electric vehicles, and demand response technologies (AB 327 and Section 769(a)).

California continues to lead the nation in DER growth and is planning for this leadership to continue as a result of numerous policies, such as those contained in SB 100,[8] commitments to transportation[9] and building electrification[10] and behind-the-meter solar photovoltaic generation and storage, and incentive programs like the Self-Generation Incentive Program.[11] The CPUC has a number of public proceedings aimed at facilitating the strategic deployment and integration of DER into the electric investor-owned utilities (IOUs) electric distributions systems. These include the Grid Modernization for a High DER Future Grid (R.21-06-017), Energy Storage Procurement Mandate (R.10-12-007), Integrated Resource Planning (R.16-02-007), Revisions to Energy Storage Procurement Framework (R.15-03-011), Streamlining Interconnection of DER and Improvements to the Interconnection Electric Tariff 21 (Rule 21) (R.17-07-007), Improving Distribution Level Interconnection Rules and Regulations for Certain Classes of Electric Generators and Electric Storage Resources (Rule 21) (R.11-09-011).

The CPUC's work to date in these, and former, proceedings have uncovered policy and technical issues associated with the deployment and integration of DER that were not originally contemplated, but which need to be addressed. Accelerated and ambitious policy goals such as SB 100 have expanded the scope of work and expertise required of staff. The CPUC currently lacks sufficient resources and the specialized expertise to tackle these new issues. Pressing forward with the multi-year effort to resolve all the policy, legal, and technical issues will require staffing to coordinate large groups of stakeholders, hold workshops, and generate white papers. These positions will facilitate the widespread adoption, interconnection, and usage of DER assets in an optimal manner and support the Governor's clean energy and reliability priorities.

E. Outcomes and Accountability

The CEC recommends programs that can be deployed quickly so this investment immediately accelerates the state's progress on meeting its clean energy goals. This funding would better position California as a leader in advancing clean technologies, decarbonizing existing buildings, advancing energy equity, and stimulating the economy. It will also allow California to be a leading partner with the Biden-Harris Administration in tackling climate change and stimulating the economy.

The CEC would, to the extent feasible, measure the outcomes of these investments in terms of energy savings and GHG reductions. While not all funding can be measured quantitatively, such as planning and outreach, CEC would report the outcomes of how these funds support the state's clean energy and climate goals.

F. Analysis of All Feasible Alternatives

Alternative 1: Approve $2.035 billion in one-time General Fund, $1.5 million one-time in Energy Resources Program Account, and $1.3 million in ongoing Public Utilities Commission Utilities Reimbursement Account funding, allocated over fiscal years 2022-23 and 2023-24, to support clean energy investments and analytical improvements to reach California's climate goals and spur new technologies to meet a 100-percent clean energy future.

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[8] See also Executive Order B-48-18, Executive Order N-79-20, and the California Energy Commission 2018 EV projections in the Staff Report, *California PEV Infrastructure Projections 2017-2025* (Docket 17-ALT-01, 2018-2019 Investment Plan Update for the Alternative and Renewable Fuel and Vehicle Technology Program).

[9] Executive Order N-79-20 sets a target for 100 percent of new cars and passenger trucks sold in California to be zero emission vehicles by 2035.

[10] SB 1477 requires the CPUC to develop programs to reduce GHG emissions from buildings in an effort to meet the state's goals of reducing GHG emissions 40 percent below 1990 levels by 2030 and achieving carbon neutrality by 2045 or sooner.

[11] The CPUC's Self-Generation Incentive Program provides incentives to support existing, new, and emerging DER technologies. It provides rebates for DER installed by utility customers (e.g., battery storage systems).

Advantages:
- Allows for immediate clean energy investments.
- Provides funding that will accelerate progress on the state's clean energy and climate goals and will accelerate support for grid reliability and energy system decarbonization efforts.
- Positions California to better leverage federal infrastructure funds.

Disadvantages:
- Requires additional General Fund money that could be used for other purposes.

Alternative 2: Approve partial funding.
Advantages:
- Allows General Fund money to be invested in other priorities.
- Still provides some of the benefits of this proposal.

Disadvantages:
- Reduces the impact this proposal can provide at a time when these investments are needed to reduce GHG emissions and stimulate the economy.

Alternative 3: Do not approve funding.
Advantages:
- Allows the General Fund money to be invested in other priorities.

Disadvantages:
- Will not allow for immediate investment in the clean energy investments.

G. Implementation Plan

Departments have started planning for implementation of the budget year funds so that they can be used as soon as possible.

H. Supplemental Information

None

I. Recommendation

The CEC recommends "Alternative 1: Approve $2.035 billion in one-time General Fund, $1.5 million one-time in Energy Resources Program Account, and $1.3 million in ongoing Public Utilities Commission Utilities Reimbursement Account funding." This alternative would support clean energy investments and analytical improvements to reach California's climate goals and spur new technologies to meet a 100-percent clean energy future.

BCP Fiscal Detail Sheet

BCP Title: Incentives for Long Duration Storage Projects

BR Name: 3360-059-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Temporary Help	0	14,000	24,000	0	0	0
Total Salaries and Wages	**$0**	**$14,000**	**$24,000**	**$0**	**$0**	**$0**
Total Personal Services	**$0**	**$14,000**	**$24,000**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
54XX - Special Items of Expense	0	126,000	216,000	0	0	0
Total Operating Expenses and Equipment	**$0**	**$126,000**	**$216,000**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$140,000**	**$240,000**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	14,000	24,000	0	0	0
Total State Operations Expenditures	**$0**	**$14,000**	**$24,000**	**$0**	**$0**	**$0**
Local Assistance - 0001 - General Fund	0	126,000	216,000	0	0	0
Total Local Assistance Expenditures	**$0**	**$126,000**	**$216,000**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$140,000**	**$240,000**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2390019 - Research and Development	0	140,000	240,000	0	0	0
Total All Programs	**$0**	**$140,000**	**$240,000**	**$0**	**$0**	**$0**

Personal Services Details

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
VR00 - Various	0	14,000	24,000	0	0	0
Total Salaries and Wages	**$0**	**$14,000**	**$24,000**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$14,000**	**$24,000**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Green Hydrogen Power Plant & Grants for Green Electrolytic Hydrogen

BR Name: 3360-060-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Temporary Help	0	10,000	0	0	0	0
Total Salaries and Wages	**$0**	**$10,000**	**$0**	**$0**	**$0**	**$0**
Total Personal Services	**$0**	**$10,000**	**$0**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
54XX - Special Items of Expense	0	90,000	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$90,000**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$100,000**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	10,000	0	0	0	0
Total State Operations Expenditures	**$0**	**$10,000**	**$0**	**$0**	**$0**	**$0**
Local Assistance - 0001 - General Fund	0	90,000	0	0	0	0
Total Local Assistance Expenditures	**$0**	**$90,000**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$100,000**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2390019 - Research and Development	0	100,000	0	0	0	0
Total All Programs	**$0**	**$100,000**	**$0**	**$0**	**$0**	**$0**

Personal Services Details

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
VR00 - Various	0	10,000	0	0	0	0
Total Salaries and Wages	**$0**	**$10,000**	**$0**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$10,000**	**$0**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Industrial Decarbonization

BR Name: 3360-061-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Temporary Help	0	11,000	10,000	0	0	0
Total Salaries and Wages	**$0**	**$11,000**	**$10,000**	**$0**	**$0**	**$0**
Total Personal Services	**$0**	**$11,000**	**$10,000**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
54XX - Special Items of Expense	0	99,000	90,000	0	0	0
Total Operating Expenses and Equipment	**$0**	**$99,000**	**$90,000**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$110,000**	**$100,000**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	11,000	10,000	0	0	0
Total State Operations Expenditures	**$0**	**$11,000**	**$10,000**	**$0**	**$0**	**$0**
Local Assistance - 0001 - General Fund	0	99,000	90,000	0	0	0
Total Local Assistance Expenditures	**$0**	**$99,000**	**$90,000**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$110,000**	**$100,000**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2390019 - Research and Development	0	110,000	100,000	0	0	0
Total All Programs	**$0**	**$110,000**	**$100,000**	**$0**	**$0**	**$0**

Personal Services Details

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
VR00 - Various	0	11,000	10,000	0	0	0
Total Salaries and Wages	**$0**	**$11,000**	**$10,000**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$11,000**	**$10,000**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Food Production Investment Program

BR Name: 3360-062-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Temporary Help	0	4,250	0	0	0	0
Total Salaries and Wages	**$0**	**$4,250**	**$0**	**$0**	**$0**	**$0**
Total Personal Services	**$0**	**$4,250**	**$0**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
54XX - Special Items of Expense	0	80,750	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$80,750**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$85,000**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	4,250	0	0	0	0
Total State Operations Expenditures	**$0**	**$4,250**	**$0**	**$0**	**$0**	**$0**
Local Assistance - 0001 - General Fund	0	80,750	0	0	0	0
Total Local Assistance Expenditures	**$0**	**$80,750**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$85,000**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2390019 - Research and Development	0	85,000	0	0	0	0
Total All Programs	**$0**	**$85,000**	**$0**	**$0**	**$0**	**$0**

Personal Services Details

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
VR00 - Various	0	4,250	0	0	0	0
Total Salaries and Wages	**$0**	**$4,250**	**$0**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$4,250**	**$0**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Energy Package: Equitable Building Decarbonization

BR Name: 3360-063-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Temporary Help	0	32,258	59,982	0	0	0
Total Salaries and Wages	**$0**	**$32,258**	**$59,982**	**$0**	**$0**	**$0**
Total Personal Services	**$0**	**$32,258**	**$59,982**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
54XX - Special Items of Expense	0	290,318	539,841	0	0	0
Total Operating Expenses and Equipment	**$0**	**$290,318**	**$539,841**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$322,576**	**$599,823**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	32,258	59,982	0	0	0
Total State Operations Expenditures	**$0**	**$32,258**	**$59,982**	**$0**	**$0**	**$0**
Local Assistance - 0001 - General Fund	0	290,318	539,841	0	0	0
Total Local Assistance Expenditures	**$0**	**$290,318**	**$539,841**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$322,576**	**$599,823**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2385010 - Building and Appliances	0	322,576	599,823	0	0	0
Total All Programs	**$0**	**$322,576**	**$599,823**	**$0**	**$0**	**$0**

Personal Services Details

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
VR00 - Various	0	32,258	59,982	0	0	0
Total Salaries and Wages	**$0**	**$32,258**	**$59,982**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$32,258**	**$59,982**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Energy Package - Clean Energy Investments BR

Name: 3900-077-BCP-2022-GB

Budget Request Summary

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
54XX - Special Items of Expense	0	20,000	20,000	0	0	0
Total Operating Expenses and Equipment	**$0**	**$20,000**	**$20,000**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$20,000**	**$20,000**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Local Assistance - 0001 - General Fund	0	20,000	20,000	0	0	0
Total Local Assistance Expenditures	**$0**	**$20,000**	**$20,000**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$20,000**	**$20,000**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
3510 - Climate Change	0	20,000	20,000	0	0	0
Total All Programs	**$0**	**$20,000**	**$20,000**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Offshore Wind Infrastructure

BR Name: 3360-065-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Temporary Help	0	2,250	0	0	0	0
Total Salaries and Wages	**$0**	**$2,250**	**$0**	**$0**	**$0**	**$0**
Total Personal Services	**$0**	**$2,250**	**$0**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
54XX - Special Items of Expense	0	42,750	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$42,750**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$45,000**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	2,250	0	0	0	0
Total State Operations Expenditures	**$0**	**$2,250**	**$0**	**$0**	**$0**	**$0**
Local Assistance - 0001 - General Fund	0	42,750	0	0	0	0
Total Local Assistance Expenditures	**$0**	**$42,750**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$45,000**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2380010 - Power Plant Site Certification and Transmission Line Corridor Designation Program	0	45,000	0	0	0	0
Total All Programs	**$0**	**$45,000**	**$0**	**$0**	**$0**	**$0**

Personal Services Details

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
VR00 - Various	0	2,250	0	0	0	0
Total Salaries and Wages	**$0**	**$2,250**	**$0**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$2,250**	**$0**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Oroville Pump Project

BR Name: 3860-062-BCP-2022-GB

Budget Request Summary

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
54XX - Special Items of Expense	0	100,000	140,000	0	0	0
Total Operating Expenses and Equipment	**$0**	**$100,000**	**$140,000**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$100,000**	**$140,000**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Local Assistance - 0001 - General Fund	0	100,000	140,000	0	0	0
Total Local Assistance Expenditures	**$0**	**$100,000**	**$140,000**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$100,000**	**$140,000**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
3240 - Implementation of the State WaterResources Development System	0	100,000	140,000	0	0	0
Total All Programs	**$0**	**$100,000**	**$140,000**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Energy Package: Offshore Wind Resources (AB 525) BR

Name: 0540-028-BCP-2022-GB

Budget Request Summary

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5340 - Consulting and Professional Services - Interdepartmental	0	1,000	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$1,000**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$1,000**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	1,000	0	0	0	0
Total State Operations Expenditures	**$0**	**$1,000**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$1,000**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
0320 - Administration of Natural Resources Agency	0	1,000	0	0	0	0
Total All Programs	**$0**	**$1,000**	**$0**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Energy Package: AB 525 Implementation Resources

BR Name: 3560-014-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Permanent	0	200	0	0	0	0
Total Salaries and Wages	**$0**	**$200**	**$0**	**$0**	**$0**	**$0**
Total Staff Benefits	0	27	0	0	0	0
Total Personal Services	**$0**	**$227**	**$0**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5301 - General Expense	0	5	0	0	0	0
5304 - Communications	0	1	0	0	0	0
5320 - Travel: Out-of-State	0	2	0	0	0	0
5320 - Travel: In-State	0	3	0	0	0	0
5322 - Training	0	1	0	0	0	0
5324 - Facilities Operation	0	4	0	0	0	0
5340 - Consulting and Professional Services - External	0	1,000	0	0	0	0
5346 - Information Technology	0	4	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$1,020**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$1,247**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	1,247	0	0	0	0
Total State Operations Expenditures	**$0**	**$1,247**	**$0**	**$0**	**$0**	**$0**

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total All Funds	**$0**	**$1,247**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2560010 - Mineral Resources Management - State Leases	0	485	0	0	0	0
2565019 - Land Management	0	762	0	0	0	0
9900100 - Administration	0	1,247	0	0	0	0
9900200 - Administration - Distributed	0	-1,247	0	0	0	0
Total All Programs	**$0**	**$1,247**	**$0**	**$0**	**$0**	**$0**

Personal Services Details

Staff Benefits

Staff Benefits	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5150900 - Staff Benefits - Other	0	27	0	0	0	0
Total Staff Benefits	**$0**	**$27**	**$0**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$27**	**$0**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Offshore Wind Energy Strategic Plan (AB 525)

BR Name: 3360-051-BCP-2022-GB

Budget Request Summary

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5340 - Consulting and Professional Services - External	0	1,500	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$1,500**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$1,500**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0465 - Energy Resources Programs Account	0	1,500	0	0	0	0
Total State Operations Expenditures	**$0**	**$1,500**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$1,500**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2380010 - Power Plant Site Certification and Transmission Line Corridor Designation Program	0	1,500	0	0	0	0
Total All Programs	**$0**	**$1,500**	**$0**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Energy Package: AB 525 Implementation Resources

BR Name: 0650-049-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Positions - Permanent	0.0	1.0	1.0	0.0	0.0	0.0
Total Positions	**0.0**	**1.0**	**1.0**	**0.0**	**0.0**	**0.0**
Salaries and Wages Earnings - Permanent	0	90	90	0	0	0
Total Salaries and Wages	**$0**	**$90**	**$90**	**$0**	**$0**	**$0**
Total Staff Benefits	0	49	49	0	0	0
Total Personal Services	**$0**	**$139**	**$139**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5301 - General Expense	0	5	5	0	0	0
5302 - Printing	0	1	1	0	0	0
5304 - Communications	0	3	3	0	0	0
5320 - Travel: In-State	0	6	6	0	0	0
5322 - Training	0	4	4	0	0	0
5324 - Facilities Operation	0	8	8	0	0	0
5326 - Utilities	0	2	2	0	0	0
5346 - Information Technology	0	9	9	0	0	0
Total Operating Expenses and Equipment	**$0**	**$38**	**$38**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$177**	**$177**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	177	177	0	0	0
Total State Operations Expenditures	**$0**	**$177**	**$177**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$177**	**$177**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
0360 - State Planning & Policy Development	0	177	177	0	0	0
Total All Programs	**$0**	**$177**	**$177**	**$0**	**$0**	**$0**

Personal Services Details

Positions

Positions	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5054 - Sr Staff Analyst I	0.0	1.0	1.0	0.0	0.0	0.0
Total Positions	**0.0**	**1.0**	**1.0**	**0.0**	**0.0**	**0.0**

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5054 - Sr Staff Analyst I	0	90	90	0	0	0
Total Salaries and Wages	**$0**	**$90**	**$90**	**$0**	**$0**	**$0**

Staff Benefits

Staff Benefits	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5150350 - Health Insurance	0	16	16	0	0	0
5150500 - OASDI	0	7	7	0	0	0
5150600 - Retirement - General	0	26	26	0	0	0
Total Staff Benefits	**$0**	**$49**	**$49**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$139**	**$139**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Energy Package: Energy Reliability Support

BR Name: 3860-065-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Permanent	0	1,796	0	0	0	0
Total Salaries and Wages	**$0**	**$1,796**	**$0**	**$0**	**$0**	**$0**
Total Staff Benefits	0	845	0	0	0	0
Total Personal Services	**$0**	**$2,641**	**$0**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5301 - General Expense	0	323	0	0	0	0
5340 - Consulting and Professional Services - External	0	36	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$359**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$3,000**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	3,000	0	0	0	0
Total State Operations Expenditures	**$0**	**$3,000**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$3,000**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
3240 - Implementation of the State Water Resources Development System	0	3,000	0	0	0	0
Total All Programs	**$0**	**$3,000**	**$0**	**$0**	**$0**	**$0**

Personal Services Details

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
VR00 - Various	0	1,796	0	0	0	0
Total Salaries and Wages	**$0**	**$1,796**	**$0**	**$0**	**$0**	**$0**

Staff Benefits

Staff Benefits	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5150600 - Retirement - General	0	558	0	0	0	0
5150900 - Staff Benefits - Other	0	287	0	0	0	0
Total Staff Benefits	**$0**	**$845**	**$0**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$2,641**	**$0**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Energy Modeling to Support California's Energy Transition

BR Name: 3360-066-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Salaries and Wages Earnings - Temporary Help	0	3,500	0	0	0	0
Total Salaries and Wages	**$0**	**$3,500**	**$0**	**$0**	**$0**	**$0**
Total Personal Services	**$0**	**$3,500**	**$0**	**$0**	**$0**	**$0**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5340 - Consulting and Professional Services - External	0	3,200	0	0	0	0
5346 - Information Technology	0	300	0	0	0	0
Total Operating Expenses and Equipment	**$0**	**$3,500**	**$0**	**$0**	**$0**	**$0**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$7,000**	**$0**	**$0**	**$0**	**$0**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0001 - General Fund	0	7,000	0	0	0	0
Total State Operations Expenditures	**$0**	**$7,000**	**$0**	**$0**	**$0**	**$0**
Total All Funds	**$0**	**$7,000**	**$0**	**$0**	**$0**	**$0**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
2385028 - Demand Analysis	0	7,000	0	0	0	0
Total All Programs	**$0**	**$7,000**	**$0**	**$0**	**$0**	**$0**

Personal Services Details

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
VR00 - Various	0	3,500	0	0	0	0
Total Salaries and Wages	**$0**	**$3,500**	**$0**	**$0**	**$0**	**$0**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$3,500**	**$0**	**$0**	**$0**	**$0**

BCP Fiscal Detail Sheet

BCP Title: Achieving a High Distributed Energy Resource Future

BR Name: 8660-074-BCP-2022-GB

Budget Request Summary

Personal Services

Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Positions - Permanent	0.0	6.0	6.0	6.0	6.0	6.0
Total Positions	**0.0**	**6.0**	**6.0**	**6.0**	**6.0**	**6.0**
Salaries and Wages Earnings - Permanent	0	723	723	723	723	723
Total Salaries and Wages	**$0**	**$723**	**$723**	**$723**	**$723**	**$723**
Total Staff Benefits	0	408	408	408	408	408
Total Personal Services	**$0**	**$1,131**	**$1,131**	**$1,131**	**$1,131**	**$1,131**

Operating Expenses and Equipment

Operating Expenses and Equipment	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5301 - General Expense	0	18	18	18	18	18
5304 - Communications	0	6	6	6	6	6
5320 - Travel: In-State	0	18	18	18	18	18
5322 - Training	0	12	12	12	12	12
5324 - Facilities Operation	0	54	54	54	54	54
5346 - Information Technology	0	18	18	18	18	18
Total Operating Expenses and Equipment	**$0**	**$126**	**$126**	**$126**	**$126**	**$126**

Total Budget Request

Total Budget Request	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Budget Request	**$0**	**$1,257**	**$1,257**	**$1,257**	**$1,257**	**$1,257**

Fund Summary

Fund Source

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
State Operations - 0462 - Public Utilities Commission Utilities Reimbursement Account	0	1,257	1,257	1,257	1,257	1,257

Fund Source	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total State Operations Expenditures	**$0**	**$1,257**	**$1,257**	**$1,257**	**$1,257**	**$1,257**
Total All Funds	**$0**	**$1,257**	**$1,257**	**$1,257**	**$1,257**	**$1,257**

Program Summary

Program Funding

Program Funding	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
6680055 - Energy	0	1,257	1,257	1,257	1,257	1,257
Total All Programs	**$0**	**$1,257**	**$1,257**	**$1,257**	**$1,257**	**$1,257**

Personal Services Details

Positions

Positions	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
3510 - Sr Utilities Engr (Spec) (Eff. 07-01-2022)	0.0	2.0	2.0	2.0	2.0	2.0
4611 - Public Utilities Reg Analyst III (Eff. 07-01-2022)	0.0	2.0	2.0	2.0	2.0	2.0
4616 - Public Utilities Reg Analyst V (Eff. 07-01-2022)	0.0	1.0	1.0	1.0	1.0	1.0
5795 - Atty III (Eff. 07-01-2022)	0.0	1.0	1.0	1.0	1.0	1.0
Total Positions	**0.0**	**6.0**	**6.0**	**6.0**	**6.0**	**6.0**

Salaries and Wages

Salaries and Wages	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
3510 - Sr Utilities Engr (Spec) (Eff. 07-01-2022)	0	278	278	278	278	278
4611 - Public Utilities Reg Analyst III (Eff. 07-01-2022)	0	192	192	192	192	192
4616 - Public Utilities Reg Analyst V (Eff. 07-01-2022)	0	116	116	116	116	116
5795 - Atty III (Eff. 07-01-2022)	0	137	137	137	137	137
Total Salaries and Wages	**$0**	**$723**	**$723**	**$723**	**$723**	**$723**

Staff Benefits

Staff Benefits	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5150350 - Health Insurance	0	141	141	141	141	141
5150450 - Medicare Taxation	0	10	10	10	10	10

Staff Benefits	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
5150500 - OASDI	0	45	45	45	45	45
5150600 - Retirement - General	0	212	212	212	212	212
Total Staff Benefits	**$0**	**$408**	**$408**	**$408**	**$408**	**$408**

Total Personal Services

Total Personal Services	FY22 Current Year	FY22 Budget Year	FY22 BY+1	FY22 BY+2	FY22 BY+3	FY22 BY+4
Total Personal Services	**$0**	**$1,131**	**$1,131**	**$1,131**	**$1,131**	**$1,131**